Abstract

[0012] A master cylinder having a housing with first and second bores that are connected to a same circuit in a braking system. A first piston is sealingly retained in the first bore to define a first chamber and a second piston is sealingly retained in the second bore to define a second chamber. The first piston has of a first cylindrical member that is connected to a second cylindrical member by a shaft. The shaft includes an actuation and a retraction ramp that terminate at an apex. An input force applied to the second cylindrical member is directly applied through the shaft to the first cylindrical member and through the actuation and retraction ramps to the second piston. Upon receipt of an actuation force on the second cylindrical member moves the first cylindrical member moves in the first chamber and the second piston moves in the second chamber as a function of the actuation ramp to respectively communicate fluid simultaneously to the same circuit. When the engagement of the second piston reaches the apex on the shaft, a pre-determined volume of fluid will have been communicated from the second chamber and further movement of the shaft terminates communication from the second chamber as the engagement is now on the retraction ramp such that the fluid pressure in chamber is at reservoir pressure and as a result side loading on the shaft is prevented and the input force from the input member is directed to moving the first cylindrical member in the first chamber to effect a brake application.